1   Patent claims

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3   1.   A method for determination of a load characteristic (K_1),
4   which indicates the load level on an electrical primary
5   component (2) in an electrical power distribution network, in
6   which method the following steps are carried out:
7   -   description values ($\tilde{M}$) which describe an operating state
8   of the primary component are recorded by means of a sensor
9   (3) which is connected to a field appliance (5) which
10   carries out functions relating to the automation of the
11   power distribution network,
12 -   an overall sum of the description values ($\tilde{M}$) is
13   determined over the duration of at least one
14   predeterminable time interval in order to form a load
15   intermediate value ($K*$), and
16 -   the load characteristic (K_1) is produced as a function of
17   the magnitude of the load intermediate value ($K*$) in
18   comparison to a predeterminable load limit value.

19

20 2.   The method as claimed in claim 1,
21 characterized in that
22   -   the load characteristic (K_1) is emitted from the field
23   appliance 5 or from a data processing device (10) which is
24   connected to the field appliance (5).

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26 3.   The method as claimed in claim 1 or 2,
27 characterized in that
28 -   a load signal (W_1) is produced and emitted from the field
29   appliance (5) or from a data processing device (10) which
30   is connected to the field appliance (5), as a function of
31   the magnitude of the load characteristic (K_1), when the
32   load characteristic (K_1) indicates that the load on the
33   primary component (2) is particularly low and/or
34   particularly high.

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1   4.   The method as claimed in one of the preceding claims,
2   characterized in that
3   - a sensor which is already present in an automation system
4   is also used to record the description values ($\tilde{M}$).
5
6   5.   The method as claimed in one of the preceding claims,
7   characterized in that
8   - measured values of a primary measurement variable are used
9   as description values ($\tilde{M}$).
10
11 6.   The method as claimed in claim 5,
12 characterized in that
13   - a current which is flowing through the primary component
14   (2) is used as the primary measurement variable.
15
16 7.   The method as claimed in claim 5,
17 characterized in that
18   - a voltage which is applied to the primary component (2) is
19   used as the primary measurement variable.
20
21 8.   The method as claimed in claim 5,
22 characterized in that
23   - a temperature of the primary component (2) is used as the
24   primary measurement variable.
25
26 9.   The method as claimed in one of the preceding claims,
27 characterized in that
28 -   the load characteristic (K_1) is produced repeatedly, and
29

1   -   successive load intermediate values (K*) are added in a

2   sum memory (13) in order to form an aging characteristic

3   (K_2).

4

5   10. The method as claimed in claim 9,

6   characterized in that

7   -   the aging characteristic (K_2) is emitted from the field

8   appliance (5) or from a data processing device (10) which

9   is connected to the field appliance (5).

10

11   11. The method as claimed in claim 9 or 10,

12   characterized in that

13   -   an aging signal (W_2) is produced as a function of the

14   magnitude of the aging characteristic (K_2) in comparison

15   to a predetermined aging limit value for the field

16   appliance (5) or a data processing device (10) which is

17   connected to the field appliance (5), and

18   -   the aging signal (W_2) is emitted from the field appliance

19   (5) or the data processing device (10).

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21   12. The method as claimed in one of claims 9 to 11,

22   characterized in that

23   -   the sum memory (13) is set to the value zero on starting

24   up the primary component (2).

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26   13. The method as claimed in one of claims 9 to 11,

27   characterized in that

28   -   the sum memory (13) is set to a start value, which takes

29   account of previous use of the primary component (2), on

30   starting up the primary component (2).

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32   14. The method as claimed in one of the preceding claims,

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1 characterized in that
2 -   if the primary component is a circuit breaker (2a), the
3   description values ($\tilde{M}$) are in each case determined only
4   while the switching contacts of the circuit breaker (2a)
5   are open.
6
7 15. The method as claimed in one of the preceding claims,
8 characterized in that
9 -   if the primary component is a circuit breaker (2a), the
10   number of switching processes carried out by the circuit
11   breaker (2a) is also determined by the field appliance
12   (5),
13 -   an aging switching value (A) is determined from this
14   number of switching processes, and
15 -   the aging switching value (A) or a warning message derived
16   from it is emitted from the field appliance (5) or from a
17   data processing device (10) which is connected to the
18   field appliance (5).